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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/014,265

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Rolf Bruck

E-41422

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10/19/2005

LERNER AND GREENBERG, PA

P O BOX 2480

HOLLYWOOD, FL 33022-2480

EXAMINER

TRAN, HIEN THI

ART UNIT

PAPER NUMBER

1764

DATE MAILED: 10/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/014,265

Applicant(s)

BRUCK ET AL.

Examiner

Hien Tran

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

On page 4, lines 10-12 it is unclear as to what is intended by "... smaller than by **at least** a factor of 0.6", does it includes all values from 0.6 to indefinite. Note that the statement is not consistent with the formula in line 21. Also it is unclear as to what "total volume" is implied.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, lines 6-8 it is unclear as to what structural limitation applicants are attempting to recite, what "total volume" is implied what is intended by "... smaller than by **at least** a factor of 0.6", does it includes all values from 0.6 to indefinite.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. The art area applicable to the instant invention is that of catalytic converter.

One of ordinary skill in this art is considered to have at least a B.S. degree, with additional education in the field and at least 5 years practical experience working in the art; is aware of the state of the art as shown by the references of record, to include those cited by applicants and the examiner (*ESSO Research & Engineering V Kahn & Co*, 183 USPQ 582 1974) and who is presumed to know something about the art apart from what references alone teach (*In re Bode*, 193 USPQ 12, (16) CCPA 1977); and who is motivated by economics to depart from the prior art to reduce costs consistent with the desired product characteristics. *In re Clinton* 188 USPQ 365, 367 (CCPA 1976) and *In re Thompson* 192 USPQ 275, 277 (CCPA 1976).

7. Claims 1-2, 13-21, 32-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al (5,802,845) in view of Machida et al (5,455,012), and Chalasani et al (6,080,345).

With respect to claims 1, 17-19, 32-34, 37, Abe et al discloses a combustion engine assembly comprising: a combustion engine having a displacement and emitting exhaust gases; a catalytic converter disposed downstream of the combustion engine for cleaning exhaust gas; said catalytic converter having at least one honeycomb body with a total volume smaller than the

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displacement by at least a factor of 0.6; and said catalytic converter having a geometric surface dimensioned to provide said catalytic converter with an effectiveness for converting at least one harmful component in the exhaust gasses into harmless components.

The apparatus of Abe et al is substantially the same as that of the instant claims, but is silent as to the percentage of effectiveness in converting the harmful component thereof.

However, since Abe et al discloses the catalytic honeycomb body with the same total volume relative to the displacement as that of the instant claim, said honeycomb body of Abe et al inherently possesses the same conversion effectiveness as that of the instant claim.

In any event, Machida et al discloses provision of a catalytic converter having honeycomb bodies having a geometric surface dimensioned to provide said catalytic converter with a high effectiveness for converting at least one harmful component in the exhaust gases into harmless components. The effectiveness apparently increases when the partition wall thickness decreases and the number of channels increases (Figs. 10-11, etc.). The partition wall thickness is at most 0.15 mm (150 micrometers) and the cell density is at least 65 cells/cm² (400 cpsi)

Chalasani et al discloses the conventionality of providing a catalytic converter having at least one honeycomb body having the cell density of 600-1500 cpsi and the cell thickness of 1-2 mils (24-50 micrometers).

It would have been obvious to one having ordinary skill in the art to select an appropriate honeycomb body as taught by Machida et al and Chalasani et al in the apparatus of Abe et al so as to provide a high effectiveness for converting at least one harmful component in the exhaust gases into harmless components, as such is conventional in the art and no cause for patentability here. Note that it has been held that where the general conditions of a claim are disclosed in the

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prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

With respect to claims 2, 13-16, 20-21, 35-36, 38-39, Machida et al and Chalasani et al discloses that the at least honeycomb body has a cross-section and a number of channels is at least 600 cells per square inch over said cross-section and the thickness of the partition walls is at most 150 μm (Machida et al) or 24-50 μm (Chalasani et al), which encompass the range thickness and number of channels recited in the instant claims. Note that it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

8. Claims 3-12, 22-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al (5,802,845) in view of Machida et al (5,455,012), Chalasani et al (6,080,345) as applied to claims 1-2, 13-21, 32-39 above and further in view of Otani et al (WO 98/51410 - corresponding to US 6,689,328).

The modified apparatus of Abe et al is substantially the same as that of the instant claims, but is silent as to whether the honeycomb body may be a metallic honeycomb body having at least one of layered and wound sheet metal layers being at least partly structure.

However, Otani et al discloses the conventionality of providing a metallic honeycomb body having at least one of layered and wound sheet metal layers being at least partly structure. Otani et al further discloses that the channels are separated by channel walls having an average thickness of less than 40 μm which encompasses the thickness of the instant claims.

It would have been obvious to one having ordinary skill in the art to select an appropriate material for the honeycomb body, such as metal sheet layers as taught by Otani et al in the

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modified apparatus of Abe et al, on the basis of its suitability for the intended use as a matter of obvious design choice and since such a modification would have involved a mere substitution of known equivalent structures. A substitution of known equivalent structures is generally recognized as being within the level of ordinary skill in the art. *In re Fout* 213 USPQ 532 (CCPA 1982); *In re Susi* 169 USPQ 423 (CCPA 1971); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *In re Ruff* 118 USPQ 343 (CCPA 1958).

Note that it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Response to Arguments

9. Applicant's arguments filed 8/4/05 have been fully considered but they are not persuasive.

Applicants argue that the equation $V < 0.6H$ has the same meaning as the sentence that "the catalytic converter has at least one honeycomb body with a total volume V smaller than the displacement H by at least a factor of 0.6". Such contention is not persuasive as the equation has not the same as the statement and it is unclear and confusing as to what applicants are attempting to recite since applicants' argument seems to conflict with the explanation on page 10, line 26 to page 11, line 4.

Applicants argue that the total volume is that of the honeycomb body. Such contention is not persuasive as the specification has not defined what is intended by the "total volume", whether it is referred to the external volume of the honeycomb body or the total of the volumes of the channels of the honeycomb body.

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Applicants argue that since the highest efficiency in Machida et al as disclosed in Figs. 10-11 are below 90% and would never reach a value of 98% or higher even if the efficiency curves are extrapolated. Such contention is not persuasive since these efficiency curves are only examples of some partition wall thicknesses, such as 0.10-0.15 mm. Machida et al discloses that the partition wall thickness is at most 0.15 mm which includes all values of less than 0.15 mm. Although Machida et al does not have a drawing showing other values of the partition wall of less than 0.1 mm, Machida et al discloses that the effectiveness increases when the partition wall thickness decreases and the number of channels increases (Figs. 10-11). Since with the 0.1 mm thickness, the effectiveness is about 92%, at a smaller thickness the effectiveness would increase even more. Note that it has been held that a disclosure in a reference is not limited to its specific illustrative examples or drawings, but must be considered as a whole to ascertain what would be realistically suggested thereby to one ordinary skill in the art. *In re Uhlig*, 54 CCPA 1300 376 F2d 320; 153 USPQ 460. Since the range of the thickness of Machida et al encompasses the instant thickness range, the effectiveness in Machida et al would inherent be the same as that of the instant claims.

The same arguments apply for Chalasani et al reference.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Noda et al and Machida et al are cited for showing state of the art.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hien Tran whose telephone number is (571) 272-1454. The examiner can normally be reached on Tuesday-Friday from 7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1454. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hien Tran

Hien Tran
Primary Examiner

HT